Amendments to the Drawings:

The attached drawing sheets 1 through 7 replace the original drawing sheets 1 through 7.

REMARKS

Claims 1-15 are currently pending in the application. By this amendment, claims 1, 4, 6, 9, 10, 11, and 14 are amended and claims 3, 8, and 13 are canceled for the Examiner's consideration. The foregoing separate sheets marked as "Listing of Claims" shows all the claims in the application, with an indication of the current status of each.

The Examiner has objected to the shading in Figures 1, 6A-6B, and 7A-7E. Replacement drawing sheets are attached in Appendix A. It is requested that the next office action include a specific statement accepting the replacement drawing sheets.

The Examiner has objected to claim 10 as not including structure to limit the scope of the claimed invention. The foregoing amendment overcomes this ground of rejection.

The Examiner has rejected claims 1-15 under 35 U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,690,965 to Riaziat et al. ("Riaziat"). It is noted that the Examiner uses the background disclosure in Riaziat for the teachings – old in the art – for measuring the respiration cycle of a patient and for using respiratory gating (see also page 2, line 13, and page 3, line 1, of the present invention). It is also noted, as described in the background section of the present invention as well as in Riaziat, that the problem of motion artifacts is a recognized problem in the prior art.

Riaziat identifies as a further problem the invasive instrumentation required to implement physiological gating according to the prior art. Riaziat goes on to disclose an optical or video imaging system to measure the physiological movement of a subject organ of the patient's body. For example, a marker may be placed on the surface of the chest and a camera is used to detect movement in the marker, corresponding to respiration (col. 4, lines 11-14). A gating signal is generated from certain threshold events detected in the motion cycle. For example, as shown in Figure 3, marker movement above a threshold value (e.g. the relative value of 0.8 for

respiration) can be used to signal that the scan beam is to be put on hold (col. 5, lines 43-52). The desired "treatment intervals" sought by Riaziat "correspond to the portion of the physiological cycle in which motion of the clinical target volume is minimized" (col. 5, lines 28-30) and "include identifying the portion of the motion signals involving the least movement of the target volume or the portion of the motion signal involving the largest separation of the target volume from organs at risk" (col. 5, lines 32-35).

Thus, contrary to the Examiner's assumption, there is no indication in Riaziat of defining a regular breathing pattern or of measuring respiration within an envelope around a regular breathing pattern. On the contrary, the example disclosed in Riaziat defines a "treatment interval" as breathing within the amplitude range 0.0 to 0.8. This is a different "interval" entirely than the envelope shown in Figure 4B of the present invention.

The present invention takes a different approach to the problem, addressing limitations in the prior art of four-dimensional computed tomography (4D CT) acquisition methods that explicitly account for respiratory motion (page 4, lines 10-13). The identified limitation of these methods is the patient's ability to maintain reproducible respiratory signals (page 4, lines 16-18). Prior art efforts to deal with this through breathing training still leave respiration irregularities (page 3, lines 31-33 and Figure 1).

In summary, the invention's approach to these prior art deficiencies is to a) identify an respiration pattern of an average breathing cycle (page 7, line 30, to page 8, line 3) through training and learning, b) establish spatial and temporal tolerances around this respiration pattern, tolerances which balance acquisition time against image quality (page 8, lines 3-11), c) calculating a preset lower tolerance limit based on the learning data (page 8, lines 12-15), d) using the tolerances to adaptively control the scan by pausing the scan when the respiration signal is out of tolerance

(page 8, lines 24-31), and e) advancing to the next scan position when sufficient data for reconstruction has been acquired (page 8, line 32, to page 9, line 9).

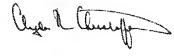
The claims have been amended to clarify the foregoing distinctions from the admitted prior art, as disclosed in the background section of the present invention and in Riaziat.

In view of the foregoing, it is requested that the application be reconsidered, that claims 1, 2, 4-7, 9-12, 14-15 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at 703-787-9400 (fax: 703-787-7557; email: clyde@wcc-ip.com) to discuss any other changes deemed necessary in a telephonic or personal interview.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



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